

# Virtual Reality Platform in MicroBooNE

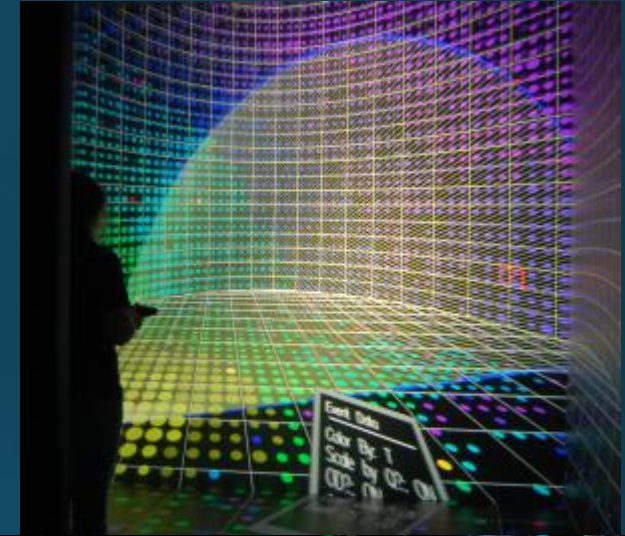
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# Introduction

- In the beginning
  - Started as a collaboration with Duke and their VR department
- Evolving to
  - Extensive outreach tool, especially for tours
  - Tool for education to teach people in about particle physics in a new way
  - Potentially new type of event display

# DiVE (Duke Immersive Virtual Environment)

- DiVE is a 3m x 3m x 3m CAVE stereoscopic rear projected room with head and hand tracking and real time computer graphics.
- Worked previously with Super-K, visually immersing people in reconstructed data
- We hope to do the same with MicroBooNE



# A tool for outreach, tours, and education

- Tourists don't really get a good picture of our detector, how it works, or what the data tells us
- Posters are boring, archaic , and don't get the attention of current (and future) generations as much as a visually stimulating image would
  - Don't do justice to any sort of big money experiment
  - Expensive (\$\$\$)

# Oculus Rift

- A virtual reality headset, originally used in video games
  - Tracks head movement with very low latency, provides 3D stereoscopic view of the game environment
- A way to 'bring MicroBooNE (and the DiVE)' to the outside world
- Received funds from the Communications office to purchase headset
  - 6 month waiting list ☹️



# Design tools and process

- Create 3D models in Blender

- Open source
- Easily imports into Unity
- Tons of help resources online



- Assemble everything in Unity

- Video Game engine
  - Albeit not the most powerful, it's free!
- Tons of resources, tutorials, and packages online
- Has builders & parsers for:
  - JSON, XML, C#, java script, and python





# Demo time!